1 METHODS OF DATA COLLECTION

Study advisory group

A multidisciplinary group of clinicians was convened to steer the study from design to completion, define the objectives of the study and advise on the key questions. The group comprised lay and patient representatives and healthcare professionals in respiratory medicine, acute medicine, emergency medicine, critical care, interventional radiology, respiratory and pleural nursing, general nursing, pharmacy and patient safety.

Study aims and objectives

The aim of the study was to identify areas for improvement in the quality of care for patients undergoing chest drain insertion and pleural aspiration; reviewing any incident investigations relating to pleural procedures and associated lessons learned; identifying patient safety incidents that had not been reported.

The objectives were to explore areas for improvement in the following areas:

- The initial recognition of the need, and decision-making process for the procedure
- Consent to the procedure
- Location/timing of the procedure
- Peri-procedure investigations (use of ultrasound), processes and care provided
- Procedure complications
- Post-procedural care (days following chest drain insertion)
- Documentation of the procedure
- Protocols, standards, safety procedures and the use of guidelines across specialties
- Training in chest drain insertion/pleural aspiration and the retention of skills, including the recording/monitoring of staff competency
- The presence of a dedicated pleural service and access to it (hours/areas of the hospital)
- Audit of standards/guidelines and the mechanism for incident reporting/sharing of learning.

Hospital participation

Data were collected from all hospitals in England, Wales, Northern Ireland and Jersey that admit and treat patients who require insertion of chest drains (including independent hospitals where applicable).

Study population and case ascertainment

Inclusion criteria

Non-elective patients aged 18 and older who were admitted to hospital between 01/01/2024 and 31/12/2024 and had a chest drain inserted, or a pleural aspiration undertaken (OPCS code T12.0-T12.9) during their hospital stay were included. Chest drains were overrepresented in the sample as they provided greater insight and learning across the whole patient pathway.

Exclusion criteria

Procedures performed on already inserted chest-drains (e.g. in-dwelling pleural catheters) were excluded. Trauma patients were excluded as they are treated on a different pathway. These patients are to be covered in an upcoming NCEPOD study on rib fractures.

Identification of the population

Each local reporter at participating hospitals was sent a pre-set spreadsheet to record patients admitted to hospital who had undergone a pleural procedure. Basic data were requested for each patient identified, including age, admission/discharge dates and times, date of pleural procedure, ICD10 and OPCS codes during the hospital stay, source of admission and discharge destination and whether an incident had been reported during the admission.

Up to eight patients per hospital were then selected from this sample. The study advisory group agreed that patient safety incidents and areas for improvement were more likely to be found among patients with chest drains and those admitted as an emergency or treated out of hours, including at weekends. The sample was therefore weighted towards these patients. Where a clinical incident had been reported, these patients made up to 50% of cases of each hospital's selection.

Data collection

Data were collected from the following sources:

Clinician questionnaire

A clinical questionnaire was assigned to the named respiratory consultant at discharge for completion. This included questions about the care received following the pathway of care from pre-admission to discharge.

Case notes

Copies of the case notes were requested for peer review of each patient's included episode of care. A list detailing the elements of the case notes that were required was provided to the NCEPOD local reporters, who collated the notes from each participating trust/health board.

Organisational questionnaires

Organisational questionnaires were disseminated to the NCEPOD local reporter for completion, with assistance from relevant local clinical leads. These detailed the organisational structures in place to deliver the service to patients who have a pleural procedure.

Surveys

The survey questionnaires were not linked to the data from patients selected for case review. They were designed using Microsoft Forms so that both patients who had undergone a pleural procedure and their treating clinicians could complete them anonymously.

Patient survey

The patient survey collected data on the lived experience of patients regarding the care they had received relating to a pleural procedure. The link to the patient survey was sent to a study contact– a senior respiratory clinician in each hospital – who shared it with patients who had had a pleural procedure when they attended their follow-up appointment. It was also promoted by the British Thoracic Society.

Clinician survey

Clinician views were collected in collaboration with the pleural team at Guy's and St Thomas' NHS Foundation Trust, who ran a nationwide survey of confidence and competence in chest drain insertion by circulating an anonymous online survey to resident doctors in general medicine, emergency medicine and critical care. NCEPOD local reporters and study contacts distributed the survey to encourage maximum involvement of clinicians.

Peer review of the case notes and questionnaire data

A multidisciplinary group of case reviewers comprised consultants and resident doctors in respiratory medicine, emergency medicine, interventional radiology, critical care medicine, acute medicine, emergency medicine, and pleural and respiratory nurses.

Using a semi-structured electronic questionnaire (reviewer assessment form), each set of case notes was reviewed by at least one reviewer within a multidisciplinary meeting. A discussion, chaired by an NCEPOD clinical co-ordinator, took place at regular intervals, allowing each reviewer to summarise their cases and ask for opinions from other specialties or raise aspects of the case for further discussion.

Data analysis

Following cleaning of the quantitative data, descriptive data summaries were produced. Qualitative data collected from the case reviewers' opinions and free-text answers in the clinician questionnaires were coded, where applicable, according to content to allow quantitative analysis. As the methodology provides a snapshot of care over a set point in time, with data collected from several sources to build a national picture, denominators will change depending on the data source, but each source is referenced throughout the document. This deep dive uses a qualitative method of peer review, and anonymised case studies have been used throughout this report to illustrate themes. The sampling method of this enquiry, unlike an audit, means that data cannot be displayed at a hospital/trust/health board/regional level.

Data analysis rules

- Small numbers have been suppressed if they risk identifying an individual (usually <3-5)
- Any percentage under 1% has been presented in the report as <1%
- Percentages were not calculated if the denominator was less than 100 so as not to inflate the findings, unless to compare groups within the same analysis
- There will be variation in the denominator for different data sources and for each individual question as it is based on the number of answers given.

Information governance

All data received and handled by NCEPOD complied with all relevant national requirements, including the General Data Protection Regulation 2016 (Z5442652), Section 251 of the NHS Act 2006 14 (PIAG 4-08(b)/2003, App No 007), and the Code of Practice on Confidential Information. Each patient was given a unique NCEPOD number.